

LEVICH, V.G.; KHAYKIN, B.I.; KIR'YANOV, V.A.

Faraday impedance for reversible electrode processes proceeding
according to the pattern of hydrogen catalytic evolution. Dokl.
AN SSSR 139 no.4:925-928 Ag '61. (MIRA 14:7)

1. Institut elektrokhimii AN SSSR. 2. Chlen-korrespondent AN SSSR
(for Levich).
(Polarization (Electricity)) (Electromotive force)

LEVICH, V.G.; KHAYKIN, B.I.; MAYRANOVSKIY, S.G.

Effect of the double layer on the polarographic catalytic
hydrogen space waves. Dokl. AN SSSR 145 no.3:605-608 JI '69.
(MIRA 15:77)

1. Institut elektrokhimii AN SSSR. 2. Chlen-korrespondent
AN SSSR (for Levich).
(Catalysis) (Electromotive force)

LEVICH, V.G.; KHAYKIN, B.I.

Irreversible polarographic catalytic space waves of
hydrogen. Dokl. AN SSSR 147 no.1:146-149 N '62.

(MIRA 15:11)

1. Institut elektrokhemii AN SSSR. 2. Chlen-korrespondent
AN SSSR (for Levich).

(Polarography)

(Catalysis)

(Hydrogen)

LEVICH, V. G.; KHAYKIN, B. I.; GRAFOV, B. M.

Faraday's heterodynation. Dokl. AN SSSR 153 no. 6:1374-
1377 D '63. (MIRA 17:1)

1. Institut elektrokhimii AN SSSR. 2. Chlen-korrespondent
AN SSSR (for Levich).

LEVICH, V. G.; KHAYKIN, B. I.; GRAFOV, B. M.

"Two new methods of investigation of fast electrode processes."

report presented at 15th Mtg, Intl Comm of Electrochemical Thermodynamics & Kinetics, London & Cambridge, UK, 21-26 Sep 1964.

Inst of Electrochemistry, AS USSR.

KHAYKIN, B.I.; FEOKTISTOV, L.G.

Limiting current in the case of deactivation of the electro-
active substance by the product of electrochemical reaction.
Zhur. fiz. khim. 38 no.3:547-550 Mr '64. (MIRA 17:7)

1. Institut elektrokhimii AN SSSR.

LEVICH, V.G.; GRAFOV, B.M.; KHAYKIN, B.I.

Second harmonic phase of a variable potential and the transfer coefficient of rapid electrochemical reactions. Dokl. AN SSSR 154 no.1:200-202 Ja'64. (MIRA 17:2)

1. Institut elektrokhemii AN SSSR. 2. Chlen-korrespondent AN SSSR (for Levich).

KHAYKIN, B.I.; ZOLOTOVITSKIY, Ya.M.; TEDORADZE, G.A.

Faradic impedance of reversible catalytic processes. Elektro-
khimiia 1 no.1:23-30 Ja '65. (MIRA 18:5)

1. Institut elektrokhemii AN SSSR.

ZOLOTOVITSKIY, Ya.M.; TEODORADZE, G.A.; KHAYKIN, B.I.

Faradaic impedance of reversible catalytic processes. Part 2:
Catalytic evolution of hydrogen from solutions of pyridine,
 α -picoline, α,α' -lutidine, and α,γ -lutidine. Elektrokhimiya
1 no.2:130-137 F '65. (MIRA 18:6)

1. Institut elektrokhimii AN SSSR.

LEVICH, V.G.; KHAYKIN, B.I.; BELOKOLOS, Ye.D.

Establishment of the adsorption equilibrium on flat and dropping electrodes and the irreversible electrochemical conversion of adsorbed substances. Elektrokhimia 1 no.10:1273-1279 0 '65.

(MIRA 18:10)

1. Institut elektrokhimii AN SSSR.

KHAYKIN, B.P., elektromekhanik.

Shortcomings to be corrected. Avtom. i svyaz' 2
no.10:42 O '58. (MIRA 11:10)

1.Vyborgskoy distantzii signalizatsii i svyazi Oktyabr'skoy dorogi.
(Railroads--Communication systems)

TARNOVSKIY, I.Ya.; SMIRNOV, V.K.; KNAYKIN, B.Ye.

Estimate of power parameters for periodic rolling with burrs.
Izv. vys. ucheb. zav.; Chern. met. 4 no.11:86-93 '61. (MIRA 14:12)

1. Ural'skiy politekhnicheskii institut.
(Rolling mills)

KHAYKIN, B.Ye. (Yerevan)

Necessity of building multi-machine systems for processing
information. NTI no.2:36-37 '63. (MIRA 16:11)

MAKAYEV, S.V., kand. tekhn. nauk; STAROSELETSKIY, M.I., inzh.;
KHAYKIN, B.Ye., inzh.

Using statistical methods for the investigation of technological processes in metallurgy. Stal' 24 no.1:89-92
Ja '64. (MIRA 17:2)

1. Nizhne-Tagil'skiy metallurgicheskiy kombinat.

__KHAYKIN, B.Ye.; TARNOVSKIY, I.Ya.

Power criterion of resistance in the theory of plastic working
of metals. Izv. vys. ucheb. zav.; Chern. met. 8 no.2:77-80 '65.
(MIRA 18:2)

1. Ural'skiy politekhnicheskiy institut.

KHAKHIL, B.Ya.; TARNOVSKIY, I.Ya.; LYAGIMOV, V.B.

Totality of criteria characterizing the shape of the center of deformation during rolling. Izv. vys. ucheb. zav.; chern. met. 8 no.7:102-107 '65.
(MIRA 18:7)

1. Ural'skiy politekhnicheskiy institut.

KHAYKIN, D.

Workshop as a basis for training. Prof.-tekh. obr. 21 no. 4:
13-14 Ap '64. (MIRA 17:5)

1. Zamestitel' direktora Kiyevskor' gorodskogo professional'no-
tekhnicheskogo uchilishcha No. 19.

KHAYKIN, E.L.

Investigating the wear of the ~~ma~~ in parts of the hydraulic distributor
in the D-183 scraper. Trudy TIIIMSKH no.19:113-117 '62. (MIRA 17:1)

KHAYKIN, G.; BAYUSHKIN, A.

Our labor productivity is growing. Sel'.stroi. 16 no.2:21-22
F '62. (MIRA 15:12)

1. Predsedatel' sove'a Kalininskoy oblastnoy mezhkolkhoznoy organizatsii (for Khaykin).
 2. Glavnyy inzhener Kalininskoy oblastnoy mezhkolkhoznoy organizatsii (for Bayushkin).
- (Construction industry—Labor productivity)

KHAYKIN, G.I.

Development of stomatological aid in Kokchetav Province,
Virgin Territory. Stomatologiya 42 no.2:31-32 Mr-Apr'63
(MIRA 17:3)

1. Glavnyy stomatolog Kokchetavskoy oblasti.

KHAYKIN, G.I.

Use of plastic suture in fractures of the mandible. Stomatologiya 40
no.3:57-58 My-Je '61. (MIRA 14:12)

1. Iz Kokchetavskoy oblastnoy bol'nitsy (glavnyy vrach L.K.Kirpo).
(JAWS—FRACTURE) (SUTURES)

KHAYKIN, G.I.

Treatment of diseases of the mouth by electrophoresis of antibiotics.
Zdrav. Kazakh. 21 no.5:30-31 '61. (MIRA 15:2)

1. Iz Kokchetavskoy oblastnoy bol'nitsy.
(MOUTH_DISEASES) (ELECTROPHORESIS) (ANTIBIOTICS)

KHAYKIN, G.I.; ZAKHURDAYEV, V.P.

Osteotomy of the mandible with simultaneous plastic repair
of perioral defects. Stomatologiya 43 no.1:94-95 Ja-F'64
(MIRA 17:4)

1. Kokchetavskaya oblastnaya bol'nitsa (glavnyy vrach L.K.
Kirpo) i Tsentral'nyy institut usovershenstvovaniya vrachey.

PEREPECHENKO, P.; SOKOLOV, G.; AVDOSHENKO, A., red.; PEREPECHENKO, P., red.; POLETAYEV, A., red.; RASTORGUYEVA, N., red.; SOKOLOV, G., red.; KHAYKIN, I., red.; KHOKHOLKOV, N., red.; SHVETSOVA, R.V., red.; SOKOLOVA, S.I., tekhn. red.

[Excursions through native territory; routes and discussion materials] Ekskursii po rodnomu kraiu; marshruty i materialy dlia besed. Vologda, Vologodskoe knizhnoe izd-vo, 1963. 255 p. (MIRA 17:1)

1. Vologda. Gosudarstvennyy pedagogicheskiy institut.

KHAYKIN, I.

Vologda export. Volog. krai no.3:28-34 '62.

(MIRA 16:12)

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USSR .

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AUTHOR: Khaykin, I.B. (Engineer)

SOV/96-58-10-5/25

TITLE: An investigation of the effectiveness of the tail-end heating surfaces in a direct-flow boiler. (Issledovan'ye effektivnosti raboty khvostovykh poverkhnostey nagreva pryamotokhnogo kotla)

PERIODICAL: Teploenergetika, 1958, No.10, pp. 18-22 (USSR)

ABSTRACT: Direct-flow boiler type 67-2-SP has an output of 230 tons/hour at a pressure of 100 atms with a superheat temperature of 510°C and feed water temperature of 215°C. It is designed for liquid slag removal and is of the inverted U arrangement (See Fig.1.). Tests were made of the effectiveness of the tail-end heating surfaces of the first example of this type of boiler-burning Donets lean coal and Stavropol' natural gas. The arrangement of the tail-end heating surfaces, such as the water economiser and the air heater is described. The most important data relating to these parts of the boiler are tabulated. Fuel analysis are given. The instrumentation used during the tests is described, also the gas analyses procedure. The results of investigation of the lower stage of the air heater are given in Figs.2. - 4. The relationship between the utilisation coefficients of this stage of the air heater and the gas velocity when burning both dust and gas are plotted in Fig.2. The relationship between the utilisation coefficient and the duration of operation on pulverised fuel is graphed in Fig.3. The coefficient of utilisation gradually

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diminishes to a steady value. The absolute values of the coefficient were somewhat less than values calculated by the standard method. The relationship between the utilisation coefficient of the air heater and the duration of operation of a dirty boiler on gas is given in Fig.4. The air heater becomes somewhat cleaned-up in course of time, improving the coefficient by about 2%. Test data for the upper stage of the air heater are also given in Figs.2. - 4. The results show that the need for effective soot blowing is greater for the upper than for the lower stage of the air heater. Data for the lower stage of the water economiser are given graphically in Figs.5. - 7. The relationships between the actual and calculated contamination factors, as a function of gas velocity when operating a clean boiler on pulverised fuel, are in Fig.5. The factors are appreciably reduced by increasing the gas speed from 4.2 - 5.3 m/sec. On the other hand, graphs given in Fig.6. show that there is some increase in the factor when the boiler has been burning pulverised fuel for a time. The relationship between the contamination factor and duration of operation for a dirty boiler burning gas is plotted in Fig.7. It will be seen that the water economiser surface is somewhat cleaned up by burning gas. Data for the upper stage of the water economiser are also given in Figs.5. - 7. and are briefly discussed. It is concluded that the experimental

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An investigation of the effectiveness of the tail-end heating surfaces in a direct-flow boiler. SOV/96-58-10-5/25

values of the utilisation coefficient of the lower stage of the air heater fall below those calculated by the recommended standard method when pulverised fuel and gas are burned. The utilisation coefficients of the upper and lower stages of the air heater are practically identical when pulverised fuel is burnt; but when burning gas, the coefficients for the upper stage exceed those for the lower and surpass the standard values. On either fuel, the actual values of the contamination coefficients for the lower stage of the water economiser exceed the standard values, but for the upper stage, the opposite is the case. There are 7 figures and 1 table.

ASSOCIATION: Moscow Division of the Central Boiler Turbine Institute ((MO TI)
TsKTI)

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KHAYKIN, I.D., inzh.

Thermal conditions in waterwalls of industrial boiler units. Elek.sta.
29 no.5:22-27 My '58. (MIRA 12:3)
(Boilers--Equipment and supplies)

SOV/96-59-8-11/27

AUTHOR: Khaykin, I.B., Engineer

TITLE: Natural Circulation During Variable Conditions

PERIODICAL: Teploenergetika 1959, Nr 8, pp 38-43 (USSR)

ABSTRACT: It is often necessary to change the operating conditions of boilers quite suddenly, and the operating staff need to know the maximum permissible rates of change of pressure and load that can be permitted without upsetting circulation in the boiler tubes. The questions that arise are not answered fully by existing published work, though useful data on natural circulation during variable operating conditions of large industrial boilers were given in a previous article by the same author published in Teploenergetika Nr 10, 1957. The present article supplements and develops the previous one, to which frequent reference is made. Circulation may be studied under variable operating conditions if it is accepted that circulation is related to the resultant steam load as defined by equation (1); that is, it is an algebraic summation of the steam generated as a result of heat evolution in the furnace, of heat stored

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Natural Circulation During Variable Conditions

in the working substance and metal of the boiler, and of changes in furnace conditions. On this basis a check may be made of the reliability of circulation provided that the pressure changes do not cause boiling in the downflow tubes. There is a criterion of reliability of circulation during a loss of pressure that might cause boiling in the down flow tubes. It is the limiting permissible steam content at the outlet from the down flow tubes which does not interrupt the circulation. Once this limiting steam content has been determined experimentally the formulae given in this article may be used to determine the limiting rate of pressure drop. Tests made on a boiler type PK-10p to check the assumptions and to establish limiting rates of pressure change were described in the previous article. Expression (2) for the steam content by weight in a down flow tube is derived from the previous article. On substituting appropriate experimental data in this formula it is concluded that a rate of change of pressure of 18 atms/min gives the limiting steam content of 1.4%. It is recommended that steam contents higher than this should not be permitted in the downflow

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tubes. Expression (3) is then derived for the permissible rate of change of pressure with different rates of flow in the downflow tubes and a curve plotted from this formula is given in Fig 1. The steam content by weight of 1.4% corresponds to a steam content by volume of 15%, which should be considered as a maximum value for boiler sets of any pressure. Expression (4) is thereby established for the maximum rate of loss of pressure. Curves of permissible rate of loss of pressure as function of rate of flow in the downflow tubes derived from this formula are plotted in Fig 2. The maximum rate of pressure increase is obtainable from a graph published in the previous article. A relationship between this rate and the thermal loading on the least heated tubes is plotted in Fig 3 for a particular case. Other practical limitations are introduced and finally expression (6) is derived for the maximum rate of pressure increase. The influence of the level of water in the drum on the permissible rates of pressure increase and decrease is then briefly considered. The curves in Fig 4 show that the

Card 3/5 maximum rate of pressure drop recommended in this article is

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much higher than that recommended by Peterson; this is because some steam formation is permitted in the downflow tubes. The recommended rates of pressure change are compared with published experimental data in Fig 5 and it will be seen that the agreement is good. Fig 6 plots the rate of fall of pressure with increase in steam load, with furnace conditions unchanged, for the main types of Soviet boilers. Conversely Fig 7 shows graphs of their rate of pressure drop when the rate of heat evolution in the furnace is reduced with a constant steam load. It is considered that circulation will be upset only if a steam load of more than 60% of the rated load is applied without any change occurring in furnace conditions, or if the heat evolved is reduced by 75% without the steam load changing. Such extreme changes are not observed in practice. Circulation might be upset if all the burners were extinguished simultaneously, but the consequences would not be serious in this case. Graphs relating the maximum rate of pressure increase and the thermal load were constructed from the results of various authors and are compared in Fig. 8. It will be noticed that the curves cross.

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and this is attributed to the different relationships of rate of pressure change as function of heat evolved adopted by the different authors. It is particularly important to establish limiting values of pressure increase at low thermal loads when circulation is most likely to be upset. Tests were made on boiler type PK-10p with both steady and variable operating conditions. The results, compared in Fig 9, show the useful circulation head at various rates of steaming and it will be seen that circulation conditions mainly depend on the rate of steaming and not on whether that rate was reached suddenly or steadily. This point is important when making calculations of circulation. There are 9 figures and 10 literature references 9 of which are Soviet and 1 German.

ASSOCIATION: MO TsKTI (Moscow Division of the Central Boiler Turbine Institute)

Card 5/5

KNAYKIN, I.D., inzhener.

Investigation of circulation in a PK-10P boiler operating at variable loads [with summary in English]. Teploenergetika 4, no.10:17-21 O '57. (MLRA 10:7)

1. Moskovskoye otdeleniye Tsentral'nogo kotloturbinnogo instituta.
(Boilers)

RABEN, A.S., kand.med.nauk; KHAYKIN, I.G.

Role of trauma in the etiology of limited scleroderma. Vest.
derm. i ven. 33 no.3:77 My-Je '59. (MIRA 12:9)

1. Iz kozhnogo otdeleniya 21-y polikliniki Oktyabr'skogo
rayzdravotdela Moskvy.

(SCLERODERMA)

KHAYKIN, I. L.

KHAYKIN, I.L., inzhener.

The major construction project of the five-year plan. Stroi.pred.
neft.prom.2 no.10:18-22 0 '57. (MIRA 10:10)
(Petroleum--Pipelines)

9(6)

AUTHOR:

Khaykin, I. M., Engineer

SOV/119-59-9-9/19

TITLE:

From Experience on the Operation of the Electronic Potentiometers of Type EPD-17

PERIODICAL:

Priborostroyeniye, 1959, Nr 9, pp 20-21 (USSR)

ABSTRACT:

The potentiometers of type EPD-17 were used for the control of annealing, quenching, and cementation processes under workshop conditions. Some failures in the operation of this apparatus made it desirable to find a way of eliminating the drawbacks of this potentiometer. The following facts were found: the weakness of this apparatus lies in the circuit consisting of the contacts of the slide block, the rheochord, and the rail. The slightest oxidation or contamination of the rheochord, rail or slide block renders the contacts unreliable, and disturbs the normal performance of the apparatus. In order to enable controlling of the condition of the slide block in the casing of the rheochord, a window 20 X 20 mm was inserted in the lid, which was very convenient for this purpose as well as for the exchanging of the slide block. In the series production of this apparatus a similar window is provided for. The authors developed a device, illustrated in a figure, for the automatic

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From Experience on the Operation of the Electronic
Potentiometers of Type EPD-17

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control of the correct condition of the contacts between slide block, rheochord, and rail of the potentiometer. The mode of operation of this apparatus is described in brief. A figure gives the diagram taken during normal performance of EPD-17. In the third figure a diagram is given which was made when the contact of this potentiometer between block, rheochord and rail were in bad condition. The slide block, regulating mechanism, and pointer did not return to their initial position, thus causing the furnace to be switched off, the process thereby coming to a standstill. The construction of the controlling device is shown in a further figure, and a short description of its mode of operation is given. This device was tested in the laboratory of the chief metallurgist of the factory. At present some of the apparatus of the type EPD fitted with this device are being safely operated under workshop conditions. There are 4 figures.

Card 2/2

KHAYKIN, I.M. (Vologda)

"Economic geography of Poland" by IU.V.Ilinich. Reviewed by I.M. Khaikin. Vest. Mosk.un. Ser. 5: Geog. 16 no.5:78 S-0 '61.

(MIRA 14:9)

(Poland--Economic geography) (Ilinich, IU. V.)

KHAYKIN, I.M.

Long-awaited textbook ("Economic geography of foreign countries;
textbook for students." Reviewed by I.M.Khaikin). Vest.LGU 16
no.12:164-165 '61. (MIRA 14:6)
(Geography, Economic)

KULIZADE, K.N.; KHAYKIN, I.Ye.

Effect of the type of motor load in pumping machines on power losses
in oil-field electric networks. Za tekhn. prog. 3 no.9:15-18 S
'63. (MIRA 16:10)

1. Azerbaydzhanskiy institut nefti i khimii im. M.Azizbekova.

AUTHOR: Khaykin, I.Ye.

90-58-7-4/8

TITLE: Some Problems of Standardizing Electric Power Consumption in Depth-Pumping Oil Extraction (Nekotoryye voprosy normirovaniya elektropotrebleniya pri dobyche nefi glubinnymi nasosami)

PERIODICAL: Energeticheskiy Byulleten', 1958, Nr 7, pp 18-20 (USSR)

ABSTRACT: K.N. Kulizade's formula and his critics' view are discussed. The author attacks the Orgenergoneft' method of determining the electric consumption norm as being unwieldy and inaccurate except over large oil regions, or deposits where individual deviations are cancelled out. The best method of determining the norm is based on a study of losses throughout the whole pumping complex. The author therefore approves Kulizade's and Shishkin's formulae, derived from factors representing these losses, calling, however, for a more accurate determination of the value of these factors. There are 5 Soviet references.

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1. Electric power--Consumption 2. Electric power--Standards

SOV-90-58-9-1/8

AUTHOR: Kulizade, K.N.; Khaykin, I.Ye.

TITLE: An Automatic Control for the Synchronous Motor of Pump Drives (Avtomatizirovaniye upravleniye sinkhronnym dvigatelem privoda stanka-kachalki)

PERIODICAL: Energeticheskiy byulleten', 1958, Nr 9, pp 1-4 (USSR)

ABSTRACT: Kulizade found that the most efficient drive for depth pumping equipment on oil sites is a low-power synchronous electric motor. V.L. Inosov recently developed a motor of this type with combined excitation and a solid rectifier, test models of which have been built by the Institut elektrotehniki AN, UkrSSR (Institute of Electrical Engineering AS, UkrSSR) and the Bakinskiy elektromekhanicheskiy zavod (Baku Electrical Equipment Plant). A synchronous motor with mechanical rectification, developed by S.G. Tamantsev, is being produced at the Armelektrozavod in Yerevan. Neither of these two motors is fitted with an automatic control system, very necessary in oil-pumping work. The author lists the technical requirements for such a system. The Chair of Power Engineering for Oil Industry of the AzII imeni Azizbekov has developed a suitable sy-

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SOV-90-58-9-1/8

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stem for the synchronous motor without mechanical excitation, which allows for starting up the motor asynchronously with subsequent switching on of excitation. The first test model of an automatic control set on these lines has been constructed. The operation of this is described (Fig. 1). A similar system also exists for use with a motor employing combined excitation (Fig. 2). There are 2 circuit diagrams and 2 Soviet references.

1. Electric motors--Control systems
2. Pump drives--Effectiveness

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SOV/94-58-12-7/19

AUTHORS: Kulizade, K.N., Candidate of Technical Sciences
Khaykin, I.Ye., Engineer

TITLE: Starting and Protective Equipment for an Electric
Motor Driving an Oil-Well Pump with Compensation of
Reactive Load (Puskozashchitnoye ustroystvo
elektrodvigatelya stanka-kachalki s kompensatsiyey
reaktivnoy nagruzki)

PERIODICAL: Promyshlennaya Energetika, 1958, Nr 12, pp 16-19 (USSR)

ABSTRACT: Plunger pumps installed in oil wells are usually driven
by electric motors and are supplied by 6 kV/380 V
transformers. The transformer substations usually have
one or two transformers of 100 to 320 kVA. Usually one
transformer substation supplies a number of pumping points
through 380 V lines as illustrated in Fig 2. The total
number of pumping installations receiving electric power
from a single transformer substation is usually 20 to 40.
The induction motors used for pump drive are usually of
the squirrel cage rotor type of output 1 to 40 kW, the
motors and starting equipment are installed out-of-doors.
A feature of this drive is the occurrence of repeated
short-time overloads and underloads with a cycle of

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Starting and Protective Equipment for an Electric Motor Driving
an Oil-Well Pump with Compensation of Reactive Load

12 to 30 times a minute. Thus the motor operates under a pulsating load varying as shown in Fig 3. In addition to the main load variations there are others caused by longitudinal oscillation of the operating rods. The motor load may also be affected by friction in the mechanism, by partial loading of the pump with oil and so on. Because of these operating conditions the power factor of the motors is usually lower than in normal service. Values of 0.4 to 0.5 are common. One method of improving the power factor of these motors is by individual compensation with capacitors, which, as will be seen from the data given in Table 1, can be very cheap. Brief advice is given about the selection of capacitors in respect of rated voltage and capacitance. Methods of estimating the motor power consumption and the necessary capacitor size are explained. A schematic circuit diagram of a starting and protective arrangement for the electric motor driving an oil well pump with power factor correction by capacitors type KBG-1M is given in Fig 4. The equipment provided in the control panel is

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Starting and Protective Equipment for an Electric Motor Driving
an Oil-Well Pump with Compensation of Reactive Load

briefly described. The equipment was tested in service
in Azerbaijan and the performance was very satisfactory.
The use of this type of equipment should be extended.
There are 4 figures.

ASSOCIATION: Azerbaydzhanskiy industrial'nyy institut imeni
Azizbekova (Azerbaijan Industrial Institute imeni
Azizbekov)

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14(5)

AUTHORS:

Kulizade, K.N., Candidate of Technical Sciences,
Docent, Khaykin, I.Ye., Engineer

SOV/143-59-3-6/20

TITLE:

Using Synchronous Motors Without Rotary Exciters
for Driving Mechanisms With Pulsating Load at Oil
Fields (Ob ispol'zovanii sinkhronnykh dvigateley
bez mashinnogo vozbuditelya dlya privoda mekhanizmov
s pul'siruyushchey nagruzkoy na neftyanykh promy-
slakh)

PERIODICAL:

Izvestiya vysshikh uchebnykh zavedeniy - Energetika,
1959, Nr 3, pp 41-49 (USSR)

ABSTRACT:

The USSR Council of Ministers obliged all industrial
installations to increase the power factor of their
electrical equipment to 0.92-0.95. Using the latest
engineering achievements and modern production methods,
it was possible to increase the power factor of Azer-
baydzhan oil fields gradually from 0.767 in 1951, to
0.832 in 1954 and to 0.890 in 1957. This power fac-
tor increase was achieved primarily with the applica-
tion of high-voltage synchronous motors and high-volt-

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Using Synchronous Motors Without Rotary Exciters for Driving
Mechanisms With Pulsating Load at Oil Fields

age static capacitors. However, the situation is
different with the low-voltage networks of the oil
fields. Here, substations may be found working with
a power factor of 0.5-0.6, having asynchronous motors
of pump units as the principal load. These asynchro-
nous motors drive the deep well pumping units, which
are the basic means of oil field exploitation in the
southern territories of the USSR and their applica-
tion is still spreading. Presently, deep well pump
motors require about 15-20% of the energy used on an
oil field. Taking into consideration that the power
factor of deep well pumping units varies from 0.4
to 0.7 at the present time, the importance of the
measures to be taken for its improvement, is obvious.
The application of AOP electric motors for driving
deep well pump units has completely justified itself
from the viewpoint of good starting properties and
drive reliability, yet their power factor is too low.
The kinematic peculiarities of the pump mechanisms

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SOV/143-59-3-6/20

Using Synchronous Motors Without Rotary Exciters for Driving Mechanisms With Pulsating Load at Oil Fields

cause difficult cyclic load conditions for the driving motors. Analyzing the work of electric motors under difficult cyclic load conditions, the authors established the dependence of the power factor on the load curve shape

$$\cos \varphi_{\eta} = \cos \varphi_{\eta} \left(\frac{r_{\eta}}{k} - r_{\eta} + 1 \right)$$

whereby r_{η} and $\cos \varphi_{\eta}$ correspond to the efficiency factor and the power factor during operation at a constant resistance moment, numerically equal to the root-mean-square torque of a given cycle (the magnitudes may be determined by the motor characteristic, depending on the degree of motor load), and k is the load curve shape factor. Two methods may be used for improving the power factor: a) centralized reactive power compensation at the oil field substations, b) compensation of the reactive load at its origin. The authors hold the latter method for more practical and recommend the application of low-power

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SOV/143-59-3-6/20

Using Synchronous Motors Without Rotary Exciters for Driving
Mechanisms With Pulsating Load at Oil Fields

synchronous motors for driving deep well pump units, since they would also generate reactive power. The authors explain the requirements for such motors. The motors must be directly connected to the power mains, being coupled with the pump mechanisms, whereby a starting torque multiple of not less than 1.8-2.0 is required. In case of power failures, the motors must start automatically after the required voltage has been restored. The maximum torque multiple, providing stable operation under peak loads, should not be smaller than 2.2-2.5. The motors should run at 1,500 rpm, but 1,000 rpm should be considered for future developments. The operating voltage is 380 volts, but a possible increase to 660 volts should be taken into consideration. The synchronous motors must have automatic excitation control providing a rational application of the compensating capability. The motors should be designed in such a way that they have a ventilated,

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SOV/143-59-3-6/20

Using Synchronous Motors Without Rotary Exciters for Driving
Mechanisms With Pulsating Load at Oil Fields

totally-enclosed housing, or at least a protected housing with moisture-proof insulation. The motors must have increased mechanical strength of their bearings and reinforced drive shaft ends. When selecting synchronous motors for deep well pumps, their capacities should be somewhat higher than required by the latter. This also requires a higher power factor at the transformer stations. The authors point out that Soviet plants produce very few low-voltage synchronous motors, which also explains their high manufacturing cost. Until now, no unified series of low-power synchronous motors has been developed, mainly because of difficulties with the excitation system. Therefore it is suggested to replace one or two asynchronous motors by synchronous motors for each power line leaving a transformer station and the excitation problem is to be overcome by using dry or mechanical rectifiers. The Kafedra energetiki neftyanoy promyshlennosti AzII imeni

Card 5/8

SOV/143-59-3-6/20

Using Synchronous Motors Without Rotary Exciters for Driving Mechanisms With Pulsating Load at Oil Fields

Azizbekova (Chair of Oil Industry Power Engineering AzII imeni Azizbekov) conducted industrial tests with experimental synchronous motors having compound excitation. The tests were performed on one of the "Leninneft" oil fields. The operational characteristics of deep well pumps SKN3-915, SKN5-1812, SKN10-3012, and the data of synchronous motors SG-4.5, MSA-72/4 and SG-35, which were used for the first time in USSR oil field practice for oil pumps. Based on the available data, two experimental versions of 30 kw synchronous motors were produced by the Bakinskiy elektromekhanicheskiy zavod (Baku Electromechanical Plant), one with a 30 km dry rectifier and another one with a 50 kw mechanical rectifier, which were also tested on an "Leninneft" oil field, having a power factor of 0.68. At the present time, another experimental motor is under construction at "Armelektrozavod" in Yerevan, which will have a power factor of 0.9, 1,000 rpm and a 50 kw mechanical rectifier.

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SOV/143-59-3-6/20

Using Synchronous Motors Without Rotary Exciters for Driving Mechanisms With Pulsating Load at Oil Fields

The authors point out that the aforementioned motors had to be controlled manually and that the starting operation had to be repeated even after brief power interruptions. Therefore, a simplified automatic control circuit for synchronous motors was developed by the Chair of Oil Industry Power Engineering which is shown in figure 4. With this arrangement, the synchronous motor is started like an asynchronous motor but with subsequent switching-on of the excitation. This system meets a number of requirements: It starts the motor when full voltage is available. Starting and stopping is performed by one control pulse. It starts the motor automatical after power failures when the voltage returns. It protects the motor of short circuits and lengthened asynchronous operation. Finally, the authors stated that additional investigations are necessary for determining the most suitable type of motor for oil field use.

Card 7/8

BABAYEV, M.A.; KHAYKIN, I.Ye.

Towards a reduction of expenditures on power in the
petroleum and gas industries. Izv. vys. ucheb. zav.; neft'
i gaz 7 no.11:50, 76 '64. (MIRA 18:11)

KHAYKIN, Kh.T.

Primary tumor of the ureter. Vop. onk. 11 no.12:86-87 '65.

(MIRA 19:1)

1. Iz urologicheskogo otdeleniya (zav. - P. L. Filippov)
Otdelencheskoy bol'nitsy imeni Dzerzhinskogo Oktyabr'skoy
zheleznoy dorogi (glavnyy vrach - V.A. Pokrovskaya).

KHAYKIN, L.A.

Making plastic facings mounted on standard cast teeth. Stomatologia
35 no.5:52 S-0 '56 (MLRA 10:4)
(DENTAL PROSTHESIS)

ANDREYEV, V.N.; VAYNBAUM, S.Ya.; POLYAKOV, V.A.; SANAROV, S.V.;
TRUSHKIN, P.G.; KHAYKIN, L.G.

Structure of the eastern sector of the Zhiguli swell in
connection with oil prospects. Geol. nefti i gaza 7 no.12:
6-11 D '63. (MIRA 17:8)

1. Kuybyshevskiy nauchno-issledovatel'skiy institut neftyanoy
promyshlennosti.

ACC NR: AP7005112

SOURCE CODE: UR/0020/66/168/004/0810/0813

VILKOV, L. V., KHAYKIN, L. S., Moscow State University imeni M. V. Lomonosov
(Moskovskiy gosudarstvennyy universitet)

"Electron-Diffraction Study of the Structure of Dimethylamidodichlorophosphine
and Dimethylamidodichlorophosphine Oxide Molecules in the Vapor State"

Moscow, Doklady Akademii Nauk SSSR, Vol 168, No 4, 1966, pp 810-813

Abstract: The configuration of the bonds of the nitrogen atom connected to the phosphorus atom was determined in an electron-diffraction sector-microphotometric investigation of dimethylamidodichlorophosphine and dimethylamidodichlorophosphine oxide. It was found that under the influence of the phosphorus atom, the configuration of the bonds of the nitrogen atom changes from essentially pyramidal in $(\text{CH}_3)_3\text{N}$ (109°), planar in $(\text{CH}_3)_2\text{NPCl}_2$ (120°), and near planar in $(\text{CH}_3)_2\text{NPOCl}_2$ (116°). A substantial increase in the length of the P-Cl bond is observed in $(\text{CH}_3)_2\text{NPCl}_2$ in comparison with PCl_3 . The length of the P-N bond, determined for the first time, is substantially less than that calculated from the covalent radii and according to the Shoemaker-Stevenson equation. In $(\text{CH}_3)_2\text{NPCl}_2$, the basic rotational isomer takes an "unprofitable"

form from the standpoint of steric interactions. The stability of this form is explained by the substantial electrostatic interactions of the Cl atoms and CH_3 groups. This article was presented by Academician M. I. Kabachnik on 11 October 1965. Orig. art. has: 1 figure and 3 tables. [JPRS: 38,970]

UDC: 541.63

Card 1/2

ACC NR: AP7005112

TOPIC TAGS: alkylphosphine, electron diffraction

SUB CODE: 07 / SUBM DATE: 21Sep65 / ORIG REF: 003 / OTH REF: 008

Card 2/2

KHAYKIN, L.Ye., inzh.

Concerning B.I. Filippov's article, "Preparation of engineers for
for assembly organizations." Mont.i spets.rab. v stroi. 24 no.12:22
D '62. (MIRA 15:12)

(Building—Erecting work) (Filippov, B.I.)

GLOVINSKIY, Ya.G., inzh., red.; PAVLOV, S.M., inzh., red.;
KHAYKIN, L.Ye., inzh., red.

[Construction specifications and regulations] Stroitel'-nye normy i pravila. Moskva, Stroiizdat. Pt.3. Sec.G. ch.10.5.[Crushing, milling, sorting, enriching, and agglomerating equipment; regulations of production and acceptance of work] Drobil'noe, razmol'noe, sortirovochnoe, obogatitel'noe i aglomeratsionnoe oborudovanie; pravila proizvodstva i priemki montazhnykh rabot (SNiP III-G.10.5-62) 1964. 26 p. (MIRA 17:7)

1. Russia (1923- U.S.S.R.) Gosudarstvennyy komitet po delam stroitel'stva. 2. Gosstroy SSSR (for Glovinskiy). 3. Mezhdudomstvennaya komissiya po peresmotru Stroitel'nykh norm i pravil (for Pavlov). 4. Proyektino-konstruktorskaya kontora Mekhanomontazhproyekt Gosudarstvennogo proizvodstvennogo komiteta po montazhnym i spetsial'nyim stroitel'nyim rabotam SSSR (for Khaykin).

KHAYKIN, M.; KHARCHENKO, L., red.; STEELYANKO, T., tekhn. red.

[Conversation on longevity] Razgovor o dolgoletii. Stavropo¹,
Stavropol'skoe knizhnoe izd-vo, 1962. 104 p. (MIRA 16:1)
(LONGEVITY)

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1. The first group of people who are interested in the study of the history of the United States are the people who are interested in the history of the United States.

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KHAYKIN, M.I.

Solvability of the inverse mixed boundary value problem. Trudy
KAI no.68:11-20 '62. (MIRA 16:10)

KHAYKIN, M.I.

Existence theorems for a class of inverse mixed boundary value
problems in the theory of analytic functions. Trudy KAI no.64:
3-24 '61. (MIRA 17:2)

KIRICHOK, Yu.G.; KLISHKO, B.K.; KUCHER, G.A.; KHAYKIN, E.I.;
KOVACH, I.A.; DANILEYKO, K.Ya.

Redesigning a skip hoist of the "Bol'shevik" Mine. Gor.
zhur. no.10:68-72 O '61. (MIRA 15:2)

1. Energolaboratoriya tresta Dzerzhinskruuda (for Kirichok, Klishko, Kucher, Khaykin). 2. Institut Krivbassproyekt (for Kovach, Danileyko).
(Krivoy Rog Basin--Mine hoisting)

ACCESSION NR:AT4025521

8/2529/62/000/063/0011/0020

AUTHOR: Khaykin, M. I.

TITLE: The solvability of the inverse mixed boundary-value problem

SOURCE: Kazan. Aviatzionnyy institut. Trudy*, no. 68, 1962. Matematika i mekhanika (Mathematics and mechanics), 11-20

TOPIC TAGS: boundary value problem, analytic function, existence theorem, symmetrical inverse problem, unsymmetrical inverse problem, contour integration

ABSTRACT: In the earlier paper the author had proved a theorem on the existence of solutions for a class of symmetric, mixed, inverse problems in the theory of analytic functions. The present note is an addendum to this earlier paper. In it are given, first, a formulation of the corresponding results for the unsymmetric problem and one of its applications, and, second, the existence theorem of the previous paper extended to the case when the known part of the desired contour has a break in the middle. The author considered an equation of the form.

$$\frac{dl}{ds} = f(s; l) e^{-i\alpha(s)} \sin s, \quad 0 \leq s < \pi, \quad (1)$$

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ACCESSION NR: AT4025521

where

$$T(e^{is}) = \frac{1}{\pi} \int_0^\pi f(t) \frac{\sin s}{\cos t - \cos s} dt \quad (2)$$

$T(e^{is})$ are the values of the imaginary part of the function which is regular on the contour and real on the diameter and has $\Psi\{f(s)\}$ real parts when $s = \pi \sin s$. The function $f(s; \lambda)$ is known and is continuous in s for $0 \leq s \leq \pi$. Under certain assumptions for $\Psi\{f\}$, the author proves that equation (1) has at least one solution. Other results are also obtained. Orig. art. has: 20 formulas.

ASSOCIATION: Aviatseyoniy institut, Kazan, (Kazan Aviation Institute)

SUBMITTED: 22Sep61

DATE ACQ: 17Apr64

ENCL: 00

SUB CODE: NA

NO REF SOV: 003

OTHER: 000

Card 2/2

KHAYKIN, M.M., inzh.; KRAVETS, F.V., master

Adjustment of MN 5106 magnetic gas analyzers to operation with
oxygen. Energetik 11 no.6:13-14 Je '63. (MIRA 16:7)

(Cases—Analysis) (Boilers)

KHAYKIN, M.M., inzh.

Designing vinyl plastic underground pipes for strength. Stroi.
truboprov. 6 no.10:22-24 0 :6l. (MIRA 14:10)
(Pipe, Plastic)

ALEKSANDROVICH, A.I., inzh.; MAKHOVER, Ye.S., inzh.; KHAYKIN, M.M., inzh.

The "Progress" flush tank. Gor.khoz.Mosk. 36 no.7:21-22 J1
'62. (MIRA 16:1)

(Water closets)

KHAYKIN, M.N.

Planning the manufacture of rubber hoses. Kauch.i rez. 21 no.1:
40-44 Ja '62. (MIRA 15,1)
(Hose)

KHAYKIN, M.N.; LYALINOV, A.N., inzh.

Manufacture of precast prestressed trusses with a span of
30 m. Bet. 1 zhel.-bet. 8 no.6:254-256 Je '62. (MIRA 15:7)

1. Nachal'nik tekhnologo-konstruktorskogo otdela Proyektного
instituta No.1 Ministerstva stroitel'stva RSFSR (for Khaykin).
(Trusses)
(Prestressed concrete)

Khaykin

5151. MICROMETHOD FOR DETERMINATION OF TETRAETHYL LEAD IN ETHYL GASOLINE. Khaykin, MO (Zavodskaya Lab. (Factory Lab.), 1950, vol.16, 7-10; abstr. in chem. abstr., 1950, vol. 44, 6609. A method requiring but 5-10 ml of gasoline is as follows: Place a 10 ml sample into a centrifuge tube, add 10% Br in CCl_4 with stirring until precipitation is complete (2-3 drops extra), after 2-3 minutes centrifuge, decant, take up the precipitate in 5-6 drops hot HNO_3 , evaporate, cool, and weigh: The Et_4Pb is given by $97.6a/d$ where a is weight of precipitate and d is density of gasoline. Microscopic examination of Pb nitrate crystals obtained after evaporation confirmed homogeneity of the precipitate obtained in this method. Deviation from determinations by standard methods is less than 0.01 ml Et_4Pb per kg of sample. CA

AUTHOR		PROCESSING AND RECOVERY INDEX	
KHIVKIN, M. A.		7	
<p>Carbide method for the rapid determination of moisture in boric acid. M. A. Khivkin and Z. P. Farikhullina. <i>Zashchita Lez. 12, 118(1947)(in Russian)</i>.—By decomposition of CuC_2 and measurement of the vol. of the C_2H_2 evolved, the moisture content, if less than 5%, can be determined with an av. deficit of 0.26%, which empirical difference can be added to the result. The data requires 15-20 min. as against the 2-4 hrs. by the standard method of drying at 80° to const. wt.</p> <p style="text-align: right;">N. Thon</p>			
<p>ASST. S. A. METALLURGICAL LITERATURE CLASSIFICATION</p>			
<p>FROM SYNDICATE</p>		<p>FROM BOMBY</p>	
<p>TO BOMBY</p>		<p>TO BOMBY</p>	

KHAYKIN, M. S.

Diffraction micro-method of measurement of the diffusion coefficient in liquids. M. S. Khaykin (Inst. Phys. Problems, Acad. Sci. U.S.S.R., Moscow). *Zhur. Tekh. Fiz.* 19, 1370-1371 (1949).—The change of the refractive index n in diffusion is followed by photography of Fraunhofer diffraction spots along the edge of a rectangular trough; under a thickness of the liquid layer of 2 mm., at a wave length of 4354 \AA , the change of n from one spot to another is 2.18×10^{-4} . The slope of the middle linear portion of the concn. distribution curve is inversely proportional to the momentary dimension δ of a spot, and the diffusion coeff. $D = N\lambda^2/4\pi t$, where t = time from the start of the diffusion, and N = total no. of spots from one pure soln. to the other; N is given by $N = (n_1 - n_2)/\lambda$, where n_0 and n_1 are the refractive indexes of the pure liquids, λ = thickness of the liquid layer. The method was tested in the diffusion of sucrose from a 0% aq. soln. into H₂O, with the result $D = 0.126 (\pm 0.24\%)$ sq. cm./24 hrs. The coeff. of mutual diffusion of H₂O and D₂O, at 24.74°, was detd. to be $D = 0.82$ sq. cm./24 hrs. δ ($\pm 3-4\%$). N. Thon

KHAZIN, M. S.

Measurement of surface resistance of superconducting tin at a frequency of 9380 megacycles. *Tr. S. K. Khazin, Doklady Akad. Nauk S.S.S.R. 15, 661-4 (1953).*—Two methods of measuring the Q of resonators are described, and the dependence of R/R_0 on T is derived for the transition of Sn from a normal to a superconducting state at 9380 megacycles. The resonance properties of a hollow circular cylinder of chemically pure Sn were detd. by detg. the width of the resonance curve by varying the frequency; for $T = 4.2^\circ\text{K}$, the Q was 80,000 ($\Delta f = 120$ kc.) which corresponds to a surface resistance $R_s = 0.01$ ohm. The max. Q measured accurately by this method was 1,500,000. Larger values were detd. by measuring the damping time of the natural oscillations of the resonator; thus, values of Q from 300,000 to 5,100,000 ($T = 1.05^\circ\text{K}$.) were detd. with an accuracy of about 15%. The dependence of R/R_0 on T (shown in a graph) was measured by both methods; it is about 0.02 at $T = 2^\circ\text{K}$, and about 0.07 at $T = 3^\circ\text{K}$.
Ellen H. Dunlap

KHAYKIN, M. S.

KHAYKIN, M. S. - "Measurement of Surface Resistance of Superconducting Tin at a Frequency of 9,400 Megacycles." Sub 18 May 52, Inst of Physical Problems imeni S. I. Vavilov. (Dissertation for the Degree of Candidate in Physico-mathematical Sciences).

SO: Vechernaya Moskva January-December 1952

USSR.

410. The measurement of the sound velocity in the liquid phase of the substance in the Zhukovskiy Institute of Physics of the USSR Academy of Sciences.

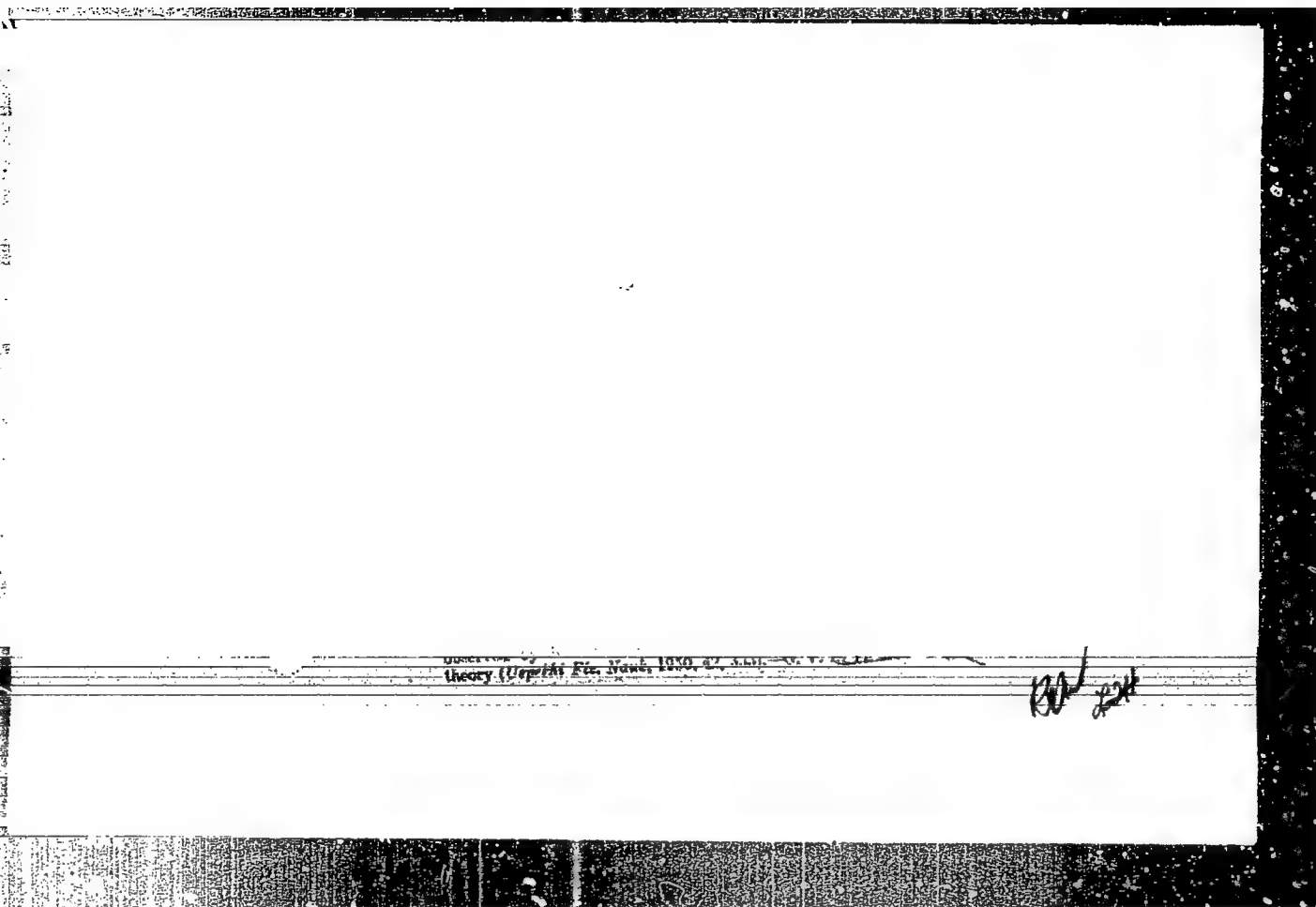
The measurement was carried out at a pressure of 9500 MPa at the temperature of 2000 K. The measurements consisted of determining the natural frequency of a quartz resonator filled with gaseous helium. The results of the measurements are given in the table.

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USSR/Physics - Low temperature studies

FE-1095

Card 1/1 Pub. 146-15/21

Author : Khaykin, M. S.

Title : Investigations into the anisotropy of the surface resistance of tin at
 low temperatures

Periodical : Zhur. eksp. i teor. fiz. 28, 115-117, January 1955

Abstract : The author attempts to explain the results of A. Pippard's experiments
 (Proc. Roy. Soc., A 203, 1950) on the assumption that the anisotropy of
 the surface conduction of tin at temperatures of liquid helium possesses
 a normal tensor character. He concludes that Pippard's assumption of the
 nontensor character is experimentally unfounded. He states that further
 experiments are necessary before one can hope to give a conclusive answer
 as to the character of the anisotropy. Four references.

Institution: Institute of Physical Problems, Academy of Sciences USSR

Submitted : July 2, 1954

USSR/Physics - Light counter

FD-1526

Card 1/1 Pub 146-11/25

Author : Rodionov, S. F.; Khaykin, M. S.; Shal'nikov, A. I.

Title : Self-quenching light counters

Periodical : Zhur. eksp. i teor. fiz. 28, 223-227, February 1955

Abstract : The authors describe self-quenching light counters. They present the special characteristics of counters with photocathodes made of platinum, aluminum, and magnesium. The described self-quenching photon counter possesses very stable counting properties and sufficient sensitivity convenient for mass production. The design and construction were carried out in the Institute of Physical Problems, Academy of Sciences USSR, by A. I. Shal'nikov and M. S. Khaykin; and the measurements of the spectral sensitivity of the counters were done in the Physical Institute, Leningrad State University, by S. F. Rodionov. Five references; e.g. S. F. Rodionov and A. I. Shal'nikov, *ibid.* 5, 160, 1935.

Institution: Institute of Physical Problems, Academy of Sciences USSR

Submitted : March 31, 1954

U S S R

multitude of points is obtained in the photoelectric

speeds sufficient to produce a photograph on the grid.

KHAYKIN, M.S.; BYKOV, V.P.

An attempt to detect the Raman effect in a superconductor. Zhur. eksp.
i teor. fiz. 30 no.1:191-192 Ja '56. (MIRA 9:7)

1. Institut fizicheskikh problem Akademii nauk SSSR.
(Raman effect) (Electrons--Spectra)

Khaykin, M.S.

120-3-27/40

AUTHORS: Zhdanov, S.M., Makarov, V.M. and Khaykin, M.S.

TITLE: An Instrument for the Signalization of the Appearance of Weak Ultraviolet Light (Pribor dlya signalizatsii poyavleniya slabogo ul'trafiolotovogo sveta)

PERIODICAL: Pribery i Tekhnika Eksperimenta, 1957, Nr 3, pp.93-96 (USSR)

ABSTRACT: The instrument responds to ultraviolet light in the range $\lambda = 2000-3000 \text{ \AA}$. The sensitive element is a photon counter CQK-1 and the electronic circuit is completely transistorised. The instrument consists of a sensitive element, an electronic circuit and a relay. The counter has a pure copper photocathode having a sharp cutoff at about 3000 \AA . The envelope of the counter is made of quartz glass which is transparent to UV for $\lambda > 2000 \text{ \AA}$. Preliminary experiments have shown that the counter CQK-1 is highly sensitive to radiation from an open flame but has a negligible sensitivity to scattered visible light in a normally illuminated room. In these conditions the counting rate from visible light was about 200 counts per minute while the count rate due to a flame 25 mm high produced by a candle at a distance of 10 meters gave a counting rate of 6000 counts per minute, (Fig.1). The electronic circuit is designed so that it will

Card 1/2

120-3-27/40

An Instrument for the Signalization of the Appearance of Weak Ultraviolet Light.

give a signal on the appearance of fire when the count rate due to it is 30 times the background. The circuit consists of an amplifier, pulseshaper, DC amplifier and a sensitivity adjustment. The circuit is shown in Figs.2-4. The instrument has been produced for operation either from the mains or a battery. The size of the instrument is 225 x 120 x 65 mm³ (Fig.5). The following persons collaborated: P.P. Zaytsev, N.A.Selitremlikov and A.I.Shal'nikov. There are 6 figures, no tables and 3 references, 2 of which are Russian and 1 English.

ASSOCIATION: Central Scientific Research Institute of Fire Prevention (Tsentral'nyy nauchno-issledovatel'skiy institut protivopozharnoy oborony)

SUBMITTED: January 16, 1957.

AVAILABLE: Library of Congress.

Card 2/2 1. Light ultraviolet-Detection 2. Instrumentation-Operation

AUTHOR: Khaykin, V. S. 507/56-34-6-4/51

TITLE: The Surface Resistance of Superconducting Cadmium
(Poverkhnostnoye soprotivleniye sverkhprovodyashchego kadmiya)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958,
Vol 34, Nr 6, pp 1389-1397 (USSR)

ABSTRACT: This paper describes an apparatus for the measurement of the surface resistance of a metal by means of a specimen cooled in a magnetic way to $-0,1^{\circ}\text{K}$. Ammonium ferric alum is used as refrigerating agent. This allows to reach the value 0,9 for the criterion $h\nu/kT_c$. T_c denotes the critical temperature of the superconducting medium. The apparatus described in this paper has the following characteristic property: Only the specimen which is a part of the measuring resonator is cooled to the temperature of the alum, but the other parts of this apparatus maintain the temperature of the helium bath. First the author describes the apparatus and the electronic scheme which automatically records the width of the frequency characteristic and the changes of the proper frequency of the system. The specimen used for the

Card 1/3

The Surface Resistance of Superconducting Cadmium

SCV/56-34-6-4/51

investigations was an electrically polished cylindrical cadmium crystal (purity 99,999 %) with a diameter of 0,9 mm. The hexagonal axis of the crystal was parallel to the cylinder axis. The author measured the change Δf of the width of the frequency characteristic of the resonator and the shift of its proper frequency caused by the transition of the specimen from the superconducting state to the normal one (and inversely). From these quantities the active resistance R of the specimen and the change dX of its reactive resistance are determined. Measuring the surface resistance of the superconductor one may determine its dielectric constant ϵ and the ratio σ/l where σ denotes the conductivity for normal electrons and l their free path. A diagram shows the dependence of ϵ on the relative temperature $t = T/T_c$. $T_c = 0,56$ K is the critical temperature of cadmium, it may be found by evaluating the results of the measurements of the total surface resistance of the cadmium specimen. In the interval $0,3 < t < 1$ the dependence $\epsilon(t)$ may be described by the simple empiric formula $\epsilon = 14,4(1 - t^4) \cdot 10^8$ CGS. For δ one finds $\delta = 13,4(1 - t^4)^{-1/2} \cdot 10^{-6}$ cm. The experimentally found dependence of the ratio σ/l on the temperature is not

Card 2/3

The Surface Resistance of Superconducting Cadmium

SOV/56-34-6-4/51

in contradiction to the formula

$1 - [(\sigma/l)_g / (\sigma/l)_0] = C(1 - t^4)$. The insufficient exactness of the results does not allow more definite statements. The author thanks P. L. Kapitsa for his interest in this paper, A. I. Shal'nikov for his constant interest and some useful advice. The author thanks also G. S. Chernyshev and I. I. Loseva for the technical help. There are 7 figures and 17 references, 7 of which are Soviet.

ASSOCIATION: Institut fizicheskikh problem Akademii nauk SSSR
(Institute of Physical Problems, AS USSR)

SUBMITTED: December 19, 1957

Card 3/3

S/081/62/000/004/062/087
B150/B138

AUTHORS: Khaykin, M. S., Derstuganov, G. V., Levkoyev, I. I., Kukhtin, V. A., Shamil'skaya, D. B.

TITLE: The developing properties of some 4-aminopyrazolones-(5) and their derivatives

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 4, 1962, 456, abstract 4L421 (Tr. Vses. n.-i. kinofotoinstituta, no. 37, 1960, 17-26)

TEXT: A synthesis is made of a series of derivatives of 4-aminopyrazolones-5, and their photographic properties are investigated. Some of these compounds, e.g. containing the methyl and free or substitution carboxyl group in position 3, are active developing substances. The introduction of the amino or oxy group into position 3 reduces the developing power. The introduction of substitutes into the phenol nucleus, which is in position 1 of the pyrazolone, has less influence on photographic properties. It is indicated that the photographic properties of 4-aminopyrazolones are connected with the electronic character of the substituting groups.

[Abstracter's note: Complete translation.]

Card 1/1

KHAYKIN, M. S.

82609

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S/056/60/039/01/25/029
B006/B063

AUTHOR: Khaykin, M. S.

TITLE: Oscillatory Dependence of the Surface Impedance of a Metal
on a Weak Magnetic Field

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TEXT: Theoretical investigations (Refs. 1 and 2) have shown that the surface impedance of a metal located in a weak, constant, magnetic field changes monotonically with increasing field strength. This observation was experimentally confirmed (Ref. 3). However, some results were obtained which indicate that this dependence is not monotonic in the case of weak fields. The author of the present paper measured the field dependence of surface impedance at 9400 Mc/sec on single crystals of high-purity tin (impurity concentration of $< 6 \cdot 10^{-5}\%$), as well as on Cd and In ($< 2 \cdot 10^{-3}\%$ impurities) (cf. Refs. 4 and 5). Fig. 1 shows the measured field dependence of the logarithm of the derivative of surface impedance with respect to

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the field $\xi(H)$, where $\xi = X^{-1} \partial X / \partial H$. The constant field was parallel to the high-frequency field H_ω . A rotation of H in the plane of the specimen led to a decrease in the oscillation amplitudes of $\xi(H)$ and shifted them toward higher field strengths. No oscillation occurred any longer with an approach to the state $H \perp H_\omega$. It was found that ξ depended on the projection of H onto H_ω . An examination of the periodicity of these oscillations showed that the following ratio held for the first four H_n -values of tin: $H_{n+1}/H_n = 1.6 \pm 0.1$. For cadmium and, similarly, for indium this ratio was determined to be 2.1 ± 0.2 (H_n is the absolute field value for which $\xi(H_n) = 0$; n is an ordinal number). Fig. 2 shows the $\xi(H)$ functions for tin at $H_\omega \parallel H$. The experiments were performed with specimens having a temperature of 3.8°K . When they were heated to 4.2°K , the oscillation amplitude was lowered by about one-half, and the value of H_n was slightly increased. No oscillations were visible at $\sim 10^\circ\text{K}$. This effect disappeared when the specimen passed over into the superconductive

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state. Moreover, it was anisotropic and practically independent of H_0 :
Both the position and the amplitude of the oscillations were found to be
independent of the crystallographical orientation. The nature of the effect,
however, was maintained. Furthermore, it depended on the degree of purity
of the specimen, and the amplitude decreased with an increase in the amount
of impurities. Commercially pure polycrystalline copper showed no effect.
The physical nature of this effect has not been clarified so far. Finally,
the author thanks P. L. Kapitza and A. I. Shal'nikov for their interest
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2 figures and 5 Soviet references.

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1. Institut fizicheskikh problem Akademii nauk SSSR.
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